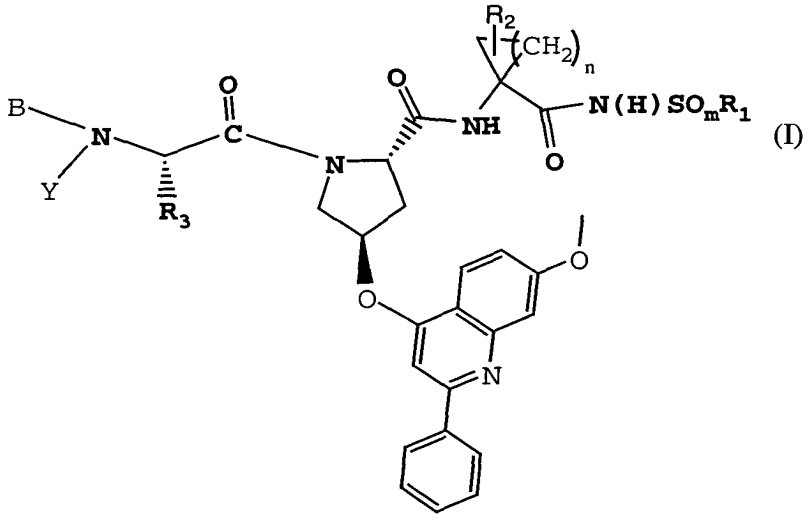
CLAIMS

What is claimed is:

1. A compound having the formula



(I)

wherein:

(a) R_1 is C_{1-8} alkyl, C_{3-7} cycloalkyl, or C_{4-10} (alkylcycloalkyl), which are all optionally substituted from one to three times with halo, cyano, nitro, C_{1-6} alkoxy, amido, amino or phenyl, or R_1 is C_6 or C_{10} aryl which is optionally substituted from one to three times with halo, cyano, nitro, C_{1-6} alkyl, C_{1-6} alkoxy, amido, amino or phenyl;

(b) m is 1 or 2;

(c) n is 1 or 2;

(d) R_2 is C_{1-6} alkyl, C_{2-6} alkenyl or C_{3-7} cycloalkyl, each optionally substituted from one to three times with halogen, or R_2 is H;

(e) R_3 is C_{1-8} alkyl optionally substituted with phenyl, C_{3-12} alkenyl, C_{3-7} cycloalkyl, or C_{4-10} (alkylcycloalkyl), wherein the cycloalkyl or

alkylcycloalkyl are optionally substituted with hydroxy, C_{1-6} alkyl, C_{2-6} alkenyl; or C_{1-6} alkoxy or R_3 together with the carbon atom to which it is attached forms a C_{3-7} cycloalkyl group optionally substituted with C_{2-6} alkenyl;

(f) Y is H, phenyl substituted with nitro, pyridyl substituted with nitro, or C_{1-6} alkyl wherein said alkyl is optionally substituted with cyano, OH or C_{3-7} cycloalkyl;

(g) B is H, C_{1-6} alkyl, R_4-(C=O)-, $R_4O(C=O)$-, R_4-N(R_5)-C(=O)-, R_4-N(R_5)-C(=S)-, R_4SO_2-, or R_4-N(R_5)-SO_2-;

(h) R_4 is (i) C_{1-10} alkyl optionally substituted with phenyl, carboxyl, C_{1-6} alkanoyl, 1-3 halogen, hydroxy, -OC(O)C_{1-6} alkyl, C_{1-6} alkoxy, amino optionally mono-or-di substituted with C_{1-6} alkyl, amido, or (lower alkyl) amido; or -O-phenyl optionally substituted with halogen or C_{1-6} alkoxy; (ii) C_{3-7} cycloalkyl, C_{3-7} cycloalkoxy, or C_{4-10} alkylcyclo-alklyl, all optionally substituted with hydroxy, carboxyl, (C_{1-6} alkoxy)carbonyl, amino optionally mono- or disubstituted with C_{1-6} alkyl, amido, or (lower alkyl) amido; (iii) amino optionally mono-or-di-substituted with C_{1-6} alkyl; amido; or (lower alkyl)amido; (iv) C_6 or C_{10} aryl or C_{7-16} aralkyl, all optionally substituted with C_{1-6} alkyl, halogen, nitro, hydroxy, amido, (lower alkyl) amido, or amino optionally mono-or-di-substituted with C_{1-6} alkyl; or (v) Het or (lower alkyl)-Het, both optionally substituted with C_{1-6} alkyl, hydroxy, amido, (lower alkyl) amido, or amino optionally mono-or-di-substituted with C_{1-6}

alkyl; (vi) bicyclo(1.1.1)pentane; (vii) $-C(O)OC_{1-6}$ alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl; and

(i) R_5 is H or C_{1-6} alkyl, said C_{1-6}alkyl optionally substituted with 1-3 halogens;

or a pharmaceutically acceptable salt, solvate or prodrug thereof.

2. A compound of Claim 1 wherein m is 2.

3. A compound of Claim 1 wherein n is 1.

4. A compound of Claim 1 wherein R_1 is cyclopropyl.

5. A compound of Claim 1 wherein R_1 is cyclobutyl.

6. A compound of Claim 1 wherein R_1 is optionally substituted phenyl.

7. A compound of Claim 1 wherein R_2 is ethyl or vinyl.

8. A compound of Claim 1 wherein R_3 is C_{1-6} alkyl.

9. A compound of Claim 1 wherein m is 2, n is 1 and R_2 is ethyl.

10. A compound of Claim 9 wherein R_1 is cyclopropyl.

11. A compound of Claim 9 wherein R_1 is cyclobutyl.

12. A compound of Claim 9 wherein R_1 is optionally substituted phenyl.

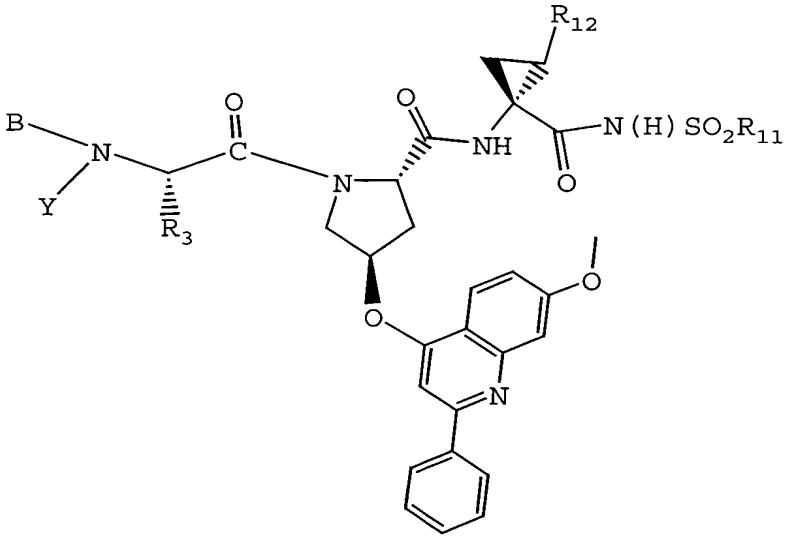
13. A compound of Claim 1 wherein m is 2, n is 1 and R_2 is vinyl.

14. A compound of Claim 13 wherein R_1 is cyclopropyl.

15. A compound of Claim 13 wherein R_1 is cyclobutyl.

16. A compound of Claim 13 wherein R_1 is optionally substituted phenyl.

17. A compound having the formula



wherein:

(a) R_{11} is C_{1-8} alkyl, C_{3-7} cycloalkyl, or C_{4-10}(alkylcyclo-alkyl), naphthyl, or phenyl wherein said phenyl is optionally substituted from one to three times with halo, cyano, nitro, C_{1-6} alkyl, C_{1-6} alkoxy, amido, or phenyl;

(b) R_{12} is C_{1-6} alkyl, C_{2-6} alkenyl or H;

(c) R_3 is C_{1-8} alkyl, C_{3-12} alkenyl, C_{3-7} cycloalkyl, or C_{4-10} (alkylcycloalkyl), wherein the cycloalkyl or alkylcycloalkyl are optionally substituted with hydroxy, C_{1-6} alkyl, C_{1-6} alkenyl, or C_{1-6} alkoxy;

(d) Y is H or C_{1-6} alkyl wherein said alkyl is optionally substituted with cyano or C_{3-7} cycloalkyl;

(e) B is H, R_4-(C=O)-, $R_4O(C=O)$-, R_4-N(R_5)-C(=O)-, R_4-N(R_5)-C(=S)-, R_4SO_2-, or R_4-N(R_5)-SO_2-;

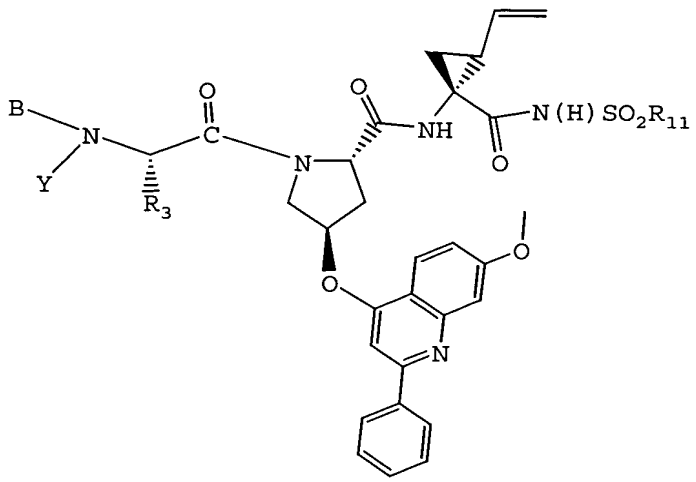
(f) R_4 is (i) C_{1-10} alkyl optionally substituted with carboxyl, C_{1-6} alkanoyl, hydroxy, C_{1-6} alkoxy, amino optionally mono-or-di substituted with C_{1-6} alkyl, amido, or (lower alkyl) amido; (ii) C_{3-7} cycloalkyl, C_{3-7} cycloalkoxy, or C_{4-10} alkylcyclo-alklyl, all optionally substituted with hydroxy, carboxyl, (C_{1-6} alkoxy)carbonyl, amino optionally mono- or disubstituted with C_{1-6} alkyl, amido, or (lower alkyl) amido; (iii) amino optionally mono-or-di-substituted with C_{1-6} alkyl; amido; or (lower alkyl)amido; (iv) C_6 or C_{10} aryl or C_{7-16} aralkyl, all optionally substituted with C_{1-6} alkyl, hydroxy, amido, (lower alkyl) amido, or amino optionally mono-or-di-substituted with C_{1-6} alkyl; or (v) Het or (lower alkyl)-Het, both optionally substituted with C_{1-6} alkyl, hydroxy, amido, (lower alkyl) amido, or amino optionally mono-or-di-substituted with C_{1-6} alkyl; and

(g) R_5 is H or C_{1-6} alkyl,

or a pharmaceutically acceptable salt, solvate or prodrug thereof.

18. A compound of Claim 17 wherein R_{11} is selected from cyclopropyl, cyclobutyl or optionally substituted phenyl.

19. A compound having the formula



wherein:

(a) R_{11} is C_{1-8} alkyl, C_{3-7} cycloalkyl, or C_{4-10} (alkylcyclo-alkyl), naphthyl, or phenyl wherein said phenyl is optionally substituted from one to three times with halo, cyano, nitro, C_{1-6} alkyl, C_{1-6} alkoxy, amido, or phenyl;

(b) R_3 is C_{1-8} alkyl, C_{3-12} alkenyl, C_{3-7} cycloalkyl, or C_{4-10} (alkylcycloalkyl), wherein the cycloalkyl or alkylcycloalkyl are optionally substituted with hydroxy, C_{1-6} alkyl, C_{1-6} alkenyl, or C_{1-6} alkoxy;

(c) Y is H or C_{1-6} alkyl wherein said alkyl is optionally substituted with cyano or C_{3-7} cycloalkyl;

(d) B is H, R_4-(C=O)-, $R_4O(C=O)$-, R_4-N(R_5)-C(=O)-, R_4-N(R_5)-C(=S)-, R_4SO_2-, or R_4-N(R_5)-SO_2-;

(e) R_4 is (i) C_{1-10} alkyl optionally substituted with carboxyl, C_{1-6} alkanoyl, hydroxy, C_{1-6} alkoxy, amino optionally mono-or-di substituted with C_{1-6} alkyl, amido, or (lower alkyl) amido; (ii) C_{3-7} cycloalkyl, C_{3-7} cycloalkoxy, or C_{4-10} alkylcyclo-alklyl, all optionally substituted with hydroxy, carboxyl, (C_{1-6} alkoxy)carbonyl, amino optionally mono- or disubstituted with C_{1-6} alkyl, amido, or

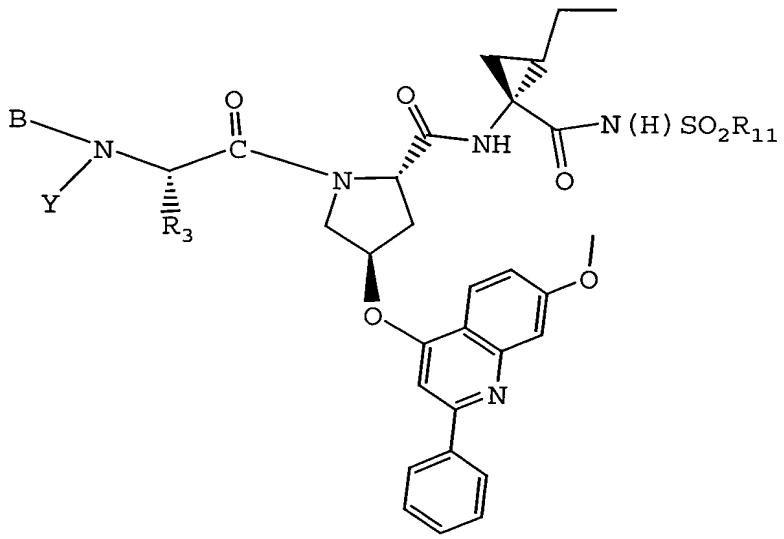
(lower alkyl) amido; (iii) amino optionally mono-or-di-substituted with C_{1-6} alkyl; amido; or (lower alkyl)amido; (iv) C_6 or C_{10} aryl or C_{7-16} aralkyl, all optionally substituted with C_{1-6} alkyl, hydroxy, amido, (lower alkyl) amido, or amino optionally mono-or-di-substituted with C_{1-6} alkyl; or (v) Het or (lower alkyl)-Het, both optionally substituted with C_{1-6} alkyl, hydroxy, amido, (lower alkyl) amido, or amino optionally mono-or-di-substituted with C_{1-6} alkyl; and

(f) R_5 is H or C_{1-6} alkyl;

or a pharmaceutically acceptable salt, solvate or prodrug thereof.

20. A compound of Claim 19 wherein R_{11} is selected from cyclopropyl, cyclobutyl or optionally substituted phenyl.

21. A compound having the formula



wherein:

(a) R_{11} is C_{1-8} alkyl, C_{3-7} cycloalkyl, or C_{4-10}(alkylcyclo-alkyl), naphthyl, or phenyl

wherein said phenyl is optionally substituted from one to three times with halo, cyano, nitro, C_{1-6} alkyl, C_{1-6} alkoxy, amido, or phenyl;

(b) R_3 is C_{1-8} alkyl, C_{3-12} alkenyl, C_{3-7} cycloalkyl, or C_{4-10} (alkylcycloalkyl), wherein the cycloalkyl or alkylcycloalkyl are optionally substituted with hydroxy, C_{1-6} alkyl, C_{1-6} alkenyl, or C_{1-6} alkoxy;

(c) Y is H or C_{1-6} alkyl wherein said alkyl is optionally substituted with cyano or C_{3-7} cycloalkyl;

(d) B is H, R_4-(C=O)-, $R_4O(C=O)$-, R_4-N(R_5)-C(=O)-, R_4-N(R_5)-C(=S)-, R_4SO_2-, or R_4-N(R_5)-SO_2-;

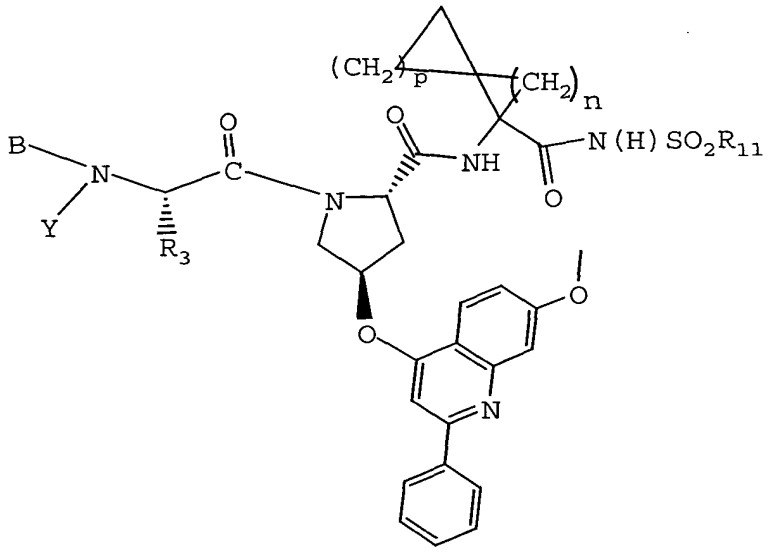
(e) R_4 is (i) C_{1-10} alkyl optionally substituted with carboxyl, C_{1-6} alkanoyl, hydroxy, C_{1-6} alkoxy, amino optionally mono-or-di substituted with C_{1-6} alkyl, amido, or (lower alkyl) amido; (ii) C_{3-7} cycloalkyl, C_{3-7} cycloalkoxy, or C_{4-10} alkylcyclo-alklyl, all optionally substituted with hydroxy, carboxyl, (C_{1-6} alkoxy)carbonyl, amino optionally mono- or disubstituted with C_{1-6} alkyl, amido, or (lower alkyl) amido; (iii) amino optionally mono-or-di-substituted with C_{1-6} alkyl; amido; or (lower alkyl)amido; (iv) C_6 or C_{10} aryl or C_{7-16} aralkyl, all optionally substituted with C_{1-6} alkyl, hydroxy, amido, (lower alkyl) amido, or amino optionally mono-or-di-substituted with C_{1-6} alkyl; or (v) Het or (lower alkyl)-Het, both optionally substituted with C_{1-6} alkyl, hydroxy, amido, (lower alkyl) amido, or amino optionally mono-or-di-substituted with C_{1-6} alkyl; and

(f) R_5 is H or C_{1-6} alkyl;

or a pharmaceutically acceptable salt, solvate or prodrug thereof.

22. A compound of Claim 21 wherein R_{11} is selected from cyclopropyl, cyclobutyl or optionally substituted phenyl.

23. A compound having the formula



wherein:

(a) R_{11} is C_{1-8} alkyl, C_{3-7} cycloalkyl, or C_{4-10}(alkylcycloalkyl), naphthyl, or phenyl wherein said phenyl is optionally substituted from one to three times with halo, cyano, nitro, C_{1-6} alkyl, C_{1-6} alkoxy, amido, or phenyl;

(b) R_3 is C_{1-8} alkyl, C_{3-12} alkenyl, C_{3-7} cycloalkyl, or C_{4-10} (alkylcycloalkyl), wherein the cycloalkyl or alkylcycloalkyl are optionally substituted with hydroxy, C_{1-6} alkyl, C_{1-6} alkenyl, or C_{1-6} alkoxy;

(c) Y is H or C_{1-6} alkyl wherein said alkyl is optionally substituted with cyano or C_{3-7} cycloalkyl;

(d) B is H, R_4-(C=O)-, R_4O(C=O)-, R_4-N(R_5)-C(=O)-, R_4-N(R_5)-C(=S)-, R_4SO_2-, or R_4-N(R_5)-SO_2-;

(e) R_4 is (i) C_{1-10} alkyl optionally substituted with

carboxyl, C_{1-6} alkanoyl, hydroxy, C_{1-6} alkoxy, amino optionally mono-or-di substituted with C_{1-6} alkyl, amido, or (lower alkyl) amido; (ii) C_{3-7} cycloalkyl, C_{3-7} cycloalkoxy, or C_{4-10} alkylcyclo-alklyl, all optionally substituted with hydroxy, carboxyl, (C_{1-6} alkoxy)carbonyl, amino optionally mono- or disubstituted with C_{1-6} alkyl, amido, or (lower alkyl) amido; (iii) amino optionally mono-or-di-substituted with C_{1-6} alkyl; amido; or (lower alkyl)amido; (iv) C_6 or C_{10} aryl or C_{7-16} aralkyl, all optionally substituted with C_{1-6} alkyl, hydroxy, amido, (lower alkyl) amido, or amino optionally mono-or-di-substituted with C_{1-6} alkyl; or (v) Het or (lower alkyl)-Het, both optionally substituted with C_{1-6} alkyl, hydroxy, amido, (lower alkyl) amido, or amino optionally mono-or-di-substituted with C_{1-6} alkyl;

(f) R_5 is H or C_{1-6} alkyl;

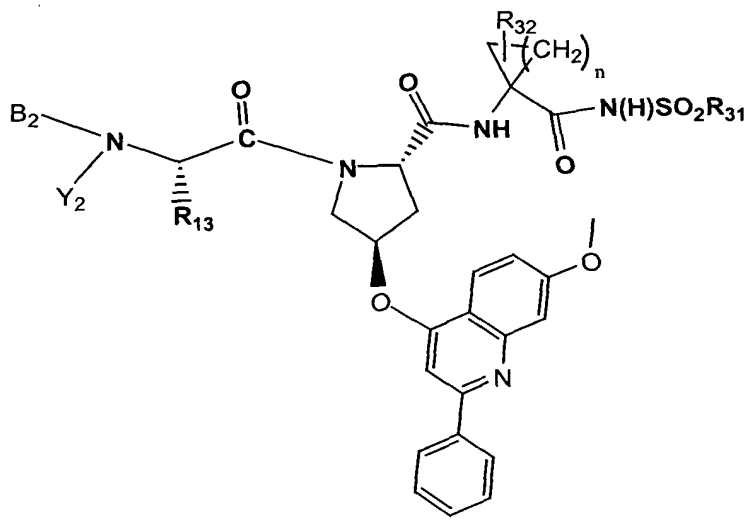
(g) n is 1 or 2; and

(h) p is 1, 2, 3, 4 or 5,

or a pharmaceutically acceptable salt, solvate or prodrug thereof.

24. A compound of Claim 23 wherein R_{11} is selected from cyclopropyl, cyclobutyl or optionally substituted phenyl.

25. A compound of having the formula



wherein:

(a) R_{31} is C_{1-8} alkyl, C_{3-7} cycloalkyl, or C_{4-10} (alkylcycloalkyl), all optionally substituted with hydroxy, halo, C_{1-6} alkoxy, C_{1-6} thioalkyl, amido, amino, (C_{1-6} alkyl)amido, C6 or C_{10} aryl, C_{7-16} aralkyl, Het, or (C_{1-6} alkyl)-Het, said aryl, arylalkyl or Het being optionally substituted with halo, alkyl or lower alkyl Het;

(b) n is 1 or 2;

(c) R_{32} is H, C_{1-6} alkyl, C_{1-3} alkoxy, C_{3-7} cycloalkyl, C_{2-6} alkenyl, or C_{2-6} alkynyl, all optionally substituted with halogen;

(d) R_{13} is C_{1-8} alkyl, C_{3-12} alkenyl, C_3-C_7 cycloalkyl, C_{4-13} cycloalkenyl, or C_4-C_{10} (alkylcycloalkyl), all optionally substituted with hydroxy, C_1-C_6 alkoxy, C_1-C_6 thioalkyl, amino, amido, (loweralkyl) amido, C_6 or C_{10} aryl, or C_7-C_{16} aralkyl;

(e) Y_2 is H or C_1-C_6 alkyl;

(f) B_2 is H, R_{14}-(C=O)-; $R_{14}O(C=O)$-, R_{14}-$N(R_{15})$-C(=O)-; R_{14}-$N(R_{15})$-C(=S)-; $R_{14}SO_2$-, or R_{14}-$N(R_{15})$-SO_2-;

(g) R_{14} is (i) C_{1-10} alkyl optionally substituted with carboxyl, C_{1-6} alkanoyl, hydroxy, C_{1-6} alkoxy, amino

optionally mono-or-di substituted with C_{1-6} alkyl, amido, or (lower alkyl) amido; (ii) C_{3-7} cycloalkyl, C_{3-7} cycloalkoxy, or C_{4-10} alkylcycloalkyl, all optionally substituted with hydroxy, carboxyl, (C_{1-6} alkoxy)carbonyl, amino optionally mono- or disubstituted with C_{1-6} alkyl, amido, or (lower alkyl) amido; (iii) amino optionally mono-or-di-substituted with C_{1-6} alkyl; amido; or (lower alkyl)amido; (iv) C_6 or C_{10} aryl or C_{7-16} aralkyl, all optionally substituted with C_{1-6} alkyl, hydroxy, amido, (lower alkyl) amido, or amino optionally mono-or-di-substituted with C_{1-6} alkyl; or (v) Het or (lower alkyl)-Het, both optionally substituted with C_{1-6} alkyl, hydroxy, amido, (lower alkyl) amido, or amino optionally mono-or-di-substituted with C_{1-6} alkyl; and

(h) R_{15} is H or C_{1-6} alkyl.

26. A salt, solvate or prodrugs of a compound of Claim 25.

27. A compound of Claim 25 wherein R_{31} is C_{3-6} cycloalkyl, C_{4-10} alkylcycloalkyl, C_{1-8} alkyl CF_3 or CCl_3.

28. A compound of Claim 25 wherein B_2 is an acyl derivative of formula R_{14}-O-(C=O)- or a carboxyl of formula R_{14}-O-(C=O)-.

29. A compound of claim 25 wherein R_2 is H, C_{1-3} alkyl, C_{3-5} cycloalkyl, or C_{2-4} alkenyl, all optionally substituted with halo.

30. A compound of claim 25 wherein R_{31} is C_{1-8} alkyl, C_{3-7} cycloalkyl, or C_{4-10} alkylcycloalkyl, all optionally substituted with hydroxy, C_{1-6} alkoxy, C_{1-6} thioalkyl, acetamido or C_6 or C_{10} aryl.

31. A compound of claim 25 wherein
B is $(CH_3)_3$-O-CO-;
Y is H; n is 1;
R_{31} is methyl, cyclopropyl or $-CF_3$;
R_{32} is ethyl or vinyl; and
R_{13} is t-butyl, i-propyl, s-butyl, i-butyl or cyclohexylmethyl.

32. A pharmaceutical composition, comprising
(a) a compound of Claim 1-31, or a pharmaceutically acceptable salt, solvate or prodrug thereof; and
(b) a pharmaceutically acceptable carrier.

33. A method of inhibiting HCV NS3 protease which comprises administering to a mammal in need of such treatment a therapeutically effective amount a compound of Claim 1-31, or a pharmaceutically acceptable salt, solvate or prodrug thereof.

34. A method of for treating an HCV infection, in a mammal in need thereof, comprising the administration to said mammal of a therapeutically effective amount a compound of Claim 1-31, or a pharmaceutically acceptable salt, solvate or prodrug thereof.